

Rejections Pursuant to 35 USC § 102 & 103

The Examiner has rejected independent claim 63 as “fully anticipated” by Ito et al. (U.S. Pat. No. 4,661,320) pursuant to 35 USC § 102. Namely, the Examiner points out that Ito discloses a “light/heat source (5), detector (6), and an optical barrier (1) therebetween”. However, as described below, this is not the case.

Claim 63 claims a “light/heat source”. Ito, on the other hand, discloses a *pure* light source (5) such as a light emitting diode (see col. 5, lines 43-50). In fact, nowhere in Ito are terms such as “thermal”, “heat”, “warm”, etc. used. Similarly, claim 63 claims an “optical barrier responsive to a presence of... heat”. As Ito fails to disclose a “light/heat source”, a feature such as “an optical barrier responsive to... heat” is likewise not disclosed by Ito (emphasis added).

Dependent claim 67 is similarly rejected pursuant to 35 USC § 102. Additionally, dependent claims 64-66 and 68-70 are rejected pursuant to 35 USC § 103. However, all of the indicated dependent claims depend from amended claim 63 indicated above. Therefore, for the reasons stated above with respect to claim 63, applicant respectfully requests removal of rejections pursuant to 35 USC § 102 & 103.

Conclusion

Applicants respectfully submit that claims 30-32, 35-45, and 63-70 are in condition for allowance. The Examiner is requested to contact the undersigned attorney at (203) 794-1100 should this be seen as helpful in advancement of prosecution of this application.

**VERSION OF AMENDED SPECIFICATION AND
CLAIMS WITH MARKINGS TO SHOW CHANGES MADE**

IN THE SPECIFICATION

Please replace the last paragraph before the paragraph beginning at line 16 with the following:

- - Figure 11 depicts another embodiment of the present invention, where the optical filter comprises a rare earth metal thin film deposited on an optical output surface of the light source. In Figure 11, the hydrogen gas detector 50 comprises a light source 32 having an optical output surface 53. A rare earth metal thin film 56, which functions as the optical filter, is deposited on the output surface 53 of the light source [32] 52. Said rare earth metal thin film 56 may comprise a rare earth metal selected from the group consisting of trivalent rare earth metals that are reactive with hydrogen to form both metal dihydride and metal trihydride reaction products, and such metal dihydride and metal trihydride reaction products have differing optical transmissivity. The rare earth metal thin film 56 is heated to an elevated temperature by a thermal energy source 54 that is separate from the light source 52. The rare earth metal thin film 56 is also overlaid by a protective layer 57, which may comprise a hydrogen-permeable material, such as Mg, Ca, Al, Ir, Ni, and Co, or a metal selected from the group consisting of palladium, platinum, and iridium. - -

IN THE CLAIMS

Please amend claim 63 as indicated.

63. (Amended) A hydrogen gas detector [for detection of hydrogen gas in a gaseous environment, said detector] comprising:

- a light/heat source[that emits both luminescent and thermal energy],
- an optical detector, and
- an optical barrier [~~therebetween~~]between said light/heat source and said optical detector, said optical barrier responsive to a presence of hydrogen and to heat from said light/heat source for affecting a transmission of light from said light/heat source through said optical barrier in a manner detectable by said optical detector [wherein the optical barrier is disposed in proximity to the light/heat source so that the optical barrier is simultaneously illuminated and heated by said light/heat source, wherein said light/heat source emits sufficient thermal energy to heat said optical barrier to an elevated temperature, wherein the optical barrier responds to the presence of hydrogen by responsively changing from a first optical state to a different second optical state, and whereby transmission of light from said light/heat source through said optical barrier is altered by the presence of hydrogen and said altered transmission is sensed by said optical detector to provide an indication of the presence of hydrogen gas in the gaseous environment].